AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) ~~Accordingly the present invention provides a~~A method for selective recording of SH waves using an array of sensors that filter out all non-SH waves, the method comprising:

(a) ~~deriving a formula for computing a length of an arm of a square array of sensors based on the following presumptions~~generating a vector sum of outputs from a plurality of seismic sensors arrayed with at least one sensor arm disposed along each side of a square array having a sensor arm length D chosen such that:

a. ~~that the~~far-field S motion and the curl of the wave-field are approximately equivalent,

b. ~~that the~~far-field SH motion and ~~the~~a vertical component of the curl of the wave-field are approximately equivalent, and

c. that the vertical component of the curl of the wave field is equivalent to the vector sum of the ~~recordings in four~~sensors placed in the four arms of ~~a~~said square array;

~~(b)~~wherein the compounding effect of the array is that of a convolution with the impulse response of the array; and ~~wherein~~

~~(c)~~(b) ~~the removal of~~removing the compounding effect of the array which is equivalent to deconvolving the effect of the array which, in turn, is equivalent to dividing the array response by its transfer function,

~~(d)~~thereby selectively recording ~~of~~SH waves while filtering out all non-SH waves.

2. (Currently Amended) A method as ~~claimed~~in claim 1 wherein ~~a~~said vector sum is carried out by digitally summing ~~the~~recordings of individual sensors of the sensor array.

3. (Currently Amended) A method as ~~claimed~~in claim 2 wherein said vector sum is carried out by ~~summing by~~electronic means summing the recordings of the individual sensors.

4. (Currently Amended) A method as ~~claimed~~in claim 1 wherein the direction of arrival of SH waves in plan view ~~can be~~at an arbitrary angle to the axis of the sensors does not materially change the recorded result.

5. (Currently Amended) A method as ~~claimed~~in claim 1 wherein the SH waves are plane waves.

6. (Currently Amended) A method as ~~claimed~~in claim 1 wherein the SH waves are non-planar waves.

7. (Currently Amended) A method as ~~claimed~~in claim 1 wherein the sensor array ~~exclusively~~records only SH-waves, while filtering out all coherent noise, P waves, microseismic and cultural noise of Rayleigh type~~ and dispense with second recording, normalization and subtraction common to all versions of ± y method and SYSLAP method.~~

8. (Currently Amended) A seismic sensor array for ~~the recordal of~~recording SH waves while filtering out all non-SH waves, the sensor array comprising:

a plurality of seismic sensors ~~connected with each other,~~arrayed in the shape of a regular polygon, each side of the polygon having ~~a~~at least one sensor at its midpoint aligned along ~~the~~that respective side; and

each sensor being connected for vector summation of its output with that of all other sensors.

9. (New) A method for filtering and recording SH seismic signals, said method comprising:

(a) arraying at least one seismic sensor on each arm of a square array of arm length D where

$D \cong C/2fm$

C being the apparent horizontal velocity of expected seismic waves, and

fm being the dominant frequency of said expected seismic waves;

(b) generating a vector sum of sensor-detected wave motion at each arm of the square array;

(c) generating the Fourier Transform $F(\omega)$ of said vector sum;

(d) generating $R(\omega) = F(\omega)/2isin(wD/2c)$; and

(e) generating the inverse Fourier Transform of $R(\omega)$ to provide r(t), a SH-wave reflection seismogram.

10. (New) A method as in claim 9 wherein each of said seismic sensors comprises at horizontal geophone aligned and centered along a respective arm of the square array.